Bridging soft soils and voids when reclaiming abandon quarries

Quarrying often occurs in urban areas, leaving abandon mines an eyesore and at a minimum a dangerous site. These mines are often left as massive holes in the ground or cuts into mountainsides. Falling debris is often a significant threat as is falling from a vertical highwall or drowning in a pool of water that has developed. Reclaiming of abandon quarries presents an opportunity for development of commercial, residential and recreational activities, but first one must address these ever present threats. Many developers are looking to fill in these areas. Structural fill is often expensive and often times less care is employed when installing organic or other materials. This backfilling practice often creates voids in the backfill making the material susceptible to settlement. In the United Kingdom, developers have twice called on Ultra High Strength geogrids to bridge the voids beneath a subdivision built on an abandon quarry. Another developer in Turkey is also employing the same solution beneath 600,000 sq meters of development. Ultra High Strength geogrids present tensile strengths up to 1500 kN/m, or 50-100 times more than traditional geogrids. These geogrids have been used in the US to bridge sinkholes on highways and transfer the loads in pile caps. This technology may offer a cost effective way to bring closure to some of the abandon mines in the United States.

Eric Michiels, PE
Global Director- Mining
Maccaferri Mining Solutions
Williamsport Maryland
240-625-8298
Eric.michiels@maccaferri.com

Eric T Michiels, PE is the Global Director for Maccaferri Mining Solutions. Mr. Michiels is a licensed engineer with 18 years of experience in the civil and mining engineering communities. Eric has an Engineering degree from the University of Illinois and a Master's degree from the University of South Florida. As the Global Director for Maccaferri, he has traveled across 6 continents visiting mines, consultants and contractors learning various geotechnical engineering techniques. Maccaferri manufacturers in more than 40 countries with operations in over 70.

Nicola Brusa is the Technical Director for Maccaferri UK. Mr. Brusa has a Masters Degree in geotechnical engineering from the University of Milan, Italy and a Civil Engineering Degree from the University of Ferrara. Nicola has written papers on the performance of geosynthetics in asphalt pavements and is on multiple design committees within the UK.